

## **Statistics**

### **Introduction**

In general, progress of sciences including statistics has become a basis on industrial and technological revolution. Growth in statistics has in fact brought various new areas of technological and interdisciplinary sciences. By the presence of medium computers, simulation and statistical modeling, it brought also new study areas like quality operation, best quality, forecasting, biostatistics, risk analysis of consumer satisfaction and others.

Contribution of statistics in the growth of modern technology has been known and confessed as "basis science". The role of technology in global information era which is of vital importance can give an answer to super highway information", so that we are able to reduce our left behind achievements in sciences and technology and then face global competition. In dealing with new technology, statistics students will be able to yield a new breakthrough in facing global competition challenge.

### **General and Specific Objectives**

The global progress of sciences and statistics has made a breakthrough in the technological and industrial revolution. The development of statistics especially gives many new branches in sciences and technology, like quality operation, best quality, forecasting, risk analysis of consumer satisfaction and others. By computer technology, simulation and statistical modeling, statistics can help to solve various problems in many fields e.g. engineering, economics, transportation, ecology, and medicine.

The specific objective is to provide the knowledge, discipline, insight and expertise in Applied Statistics, mainly in Computational Statistics in order that the students can increase their ability to:

1. Ability to apply, analyze using Computational Statistics and to solve, calculate the related problems.
2. Ability to interpret, analyze the statistical solution, and create statistical solution in the form algorithm, and integrate using Database Technology.
3. Ability to recognize, use, and appraise various statistics knowledge.
4. Ability to apply, analyze, formulate and evaluate using advanced applied statistics.

### **Prospective Career of the Graduates**

The graduates of the study program Applied Statistics are able to follow careers in :

1. General (Lecturer, Business consultant, Surveyor and Pollster)
2. Business (Quantitative credit analyst, forecasting analyst)
3. Management (Quality operation procedure analyst, Sale forecast analyst, Profit growth analyst, Export-Import analyst, Business index analyst)
4. Computer (System simulation, Pattern recognition, Image processing)
5. Research (LIPI, BPPT, BPS, R&D Department, BEI)

### **Curriculum**

Applied Statistics study program curriculum is developed according to the national curriculum of Statistics Studies, while the local substances are developed according to the ACM (American Computing Machinerics), standard curriculum, and market demand. As a result, statistics graduates are expected to be able to compete nationally and internationally.

**Course Structure**

| Sem      | Code                                       | Course Name                         | SCU                         | Total |  |
|----------|--|-------------------------------------|-----------------------------|-------|--|
| 1        | CHAR6013                                   | Character Building: Pancasila       | 2                           | 20    |  |
|          | STAT6026                                   | Probability and Statistics          | 2                           |       |  |
|          | COMP6047                                   | Algorithm and Programming           | 4/2                         |       |  |
|          | MATH6038                                   | Calculus I                          | 4                           |       |  |
|          | MATH6025                                   | Discrete Mathematics                | 4                           |       |  |
|          | <b>English University Courses I</b>        |                                     |                             |       |  |
|          | ENGL6128                                   | English in Focus                    | 2                           |       |  |
| ENGL6130 | English for Business Presentation          | 2                                   |                             |       |  |
| 2        | CHAR6014                                   | Character Building: Kewarganegaraan | 2                           | 20    |  |
|          | MATH6015                                   | Applied Linear Algebra              | 4                           |       |  |
|          | MATH6039                                   | Calculus II                         | 4                           |       |  |
|          | COMP6048                                   | Data Structures                     | 4/2                         |       |  |
|          | COMP6060                                   | Programming Language Concepts       | 2                           |       |  |
|          | <b>English University Courses II</b>       |                                     |                             |       |  |
|          | ENGL6129                                   | English Savvy                       | 2                           |       |  |
| ENGL6131 | English for Written Business Communication | 2                                   |                             |       |  |
| 3        | CHAR6015                                   | Character Building: Agama           | 2                           | 20    |  |
|          | STAT6018                                   | Statistical Theory I                | 4                           |       |  |
|          | STAT6058                                   | Sampling Techniques                 | 2                           |       |  |
|          | STAT6047                                   | Numerical Methods for Statistics    | 2                           |       |  |
|          | STAT6094                                   | Statistical Computing Lab           | 2/2                         |       |  |
|          | ISYS6169                                   | Database Systems                    | 4/2                         |       |  |
| 4        | STAT6016                                   | Simulation Techniques               | 2                           | 20    |  |
|          | ENTR6003                                   | Entrepreneurship I                  | 2                           |       |  |
|          | STAT6020                                   | Statistical Theory II               | 4                           |       |  |
|          | STAT6011                                   | Design and Analysis of Experiments  | 4                           |       |  |
|          | STAT6037                                   | Non Parametric Statistics           | 2                           |       |  |
|          | STAT6085                                   | Regression Analysis                 | 2/2                         |       |  |
|          | STAT6044                                   | Categorical Data Analysis           | 2                           |       |  |
| 5        | STAT6043                                   | Linear Model                        | 2                           | 22    |  |
|          | STAT6055                                   | Structural Equation Modeling        | 2                           |       |  |
|          | STAT6040                                   | Scientific Computation              | 4                           |       |  |
|          | STAT6053                                   | Multivariate Statistics             | 4                           |       |  |
|          | STAT6054                                   | Econometrics                        | 2/1                         |       |  |
|          | STAT6036                                   | Stochastic Process                  | 4                           |       |  |
|          | STAT6115                                   | Statistical Quality Control*        | 2/1                         |       |  |
| 6        | STAT6051                                   | Time Series Analysis                | 2/1                         | 22    |  |
|          | ENTR6004                                   | Entrepreneurship II                 | 2                           |       |  |
|          | STAT6105                                   | Statistical Marketing Research*     | 4                           |       |  |
|          | STAT6031                                   | Seminar                             | 2                           |       |  |
|          | MATH6049                                   | Mathematics of Finance              | 4                           |       |  |
|          | STAT6106                                   | Statistical Process Control         | 4                           |       |  |
| STAT6050 | Survival Analysis                          | 2/1                                 |                             |       |  |
| 7        | <b>Enrichment Program</b>                  |                                     | 16                          | 16    |  |
| 8        | STAT6030                                   | Thesis/Final Project                | 6                           | 6     |  |
|          |  |                                     | <b>TOTAL CREDIT 146 SCU</b> |       |  |

\*) *Entrepreneurship Embedded*

**English University Courses:**

- ) For 1<sup>st</sup> Semester : *English University Courses I, student with score Binus University English Proficiency Test less than 500 will take English in Focus, and student with score test greater than or equal to 500 will take English for Business Presentation*
- ) For 2<sup>nd</sup> Semester: *English University Courses II, student with score Binus University English Proficiency Test less than 500 will take English Savvy, and student with score test greater than or equal to 500 will take English for Written Business Communication*

**Enrichment Program (7<sup>th</sup> Semester):**

- ) *Student will take one of enrichment program tracks (off campus).*

**Enrichment Internship Track**

| Code     | Course Name                     | SCU | Total |
|----------|---------------------------------|-----|-------|
| STAT6090 | Internship                      | 8   | 16    |
| STAT6091 | Data Analysis in Industry       | 2   |       |
| STAT6092 | Statistical Program in Industry | 2   |       |
| STAT6093 | EES in Industry                 | 4   |       |

**Enrichment Entrepreneurship Track**

| Code     | Course Name                 | SCU | Total |
|----------|-----------------------------|-----|-------|
| ENTR6062 | Business Start Up           | 8   | 16    |
| ENTR6063 | Business Model & Validation | 2   |       |
| ENTR6064 | Launching New Venture       | 2   |       |
| ENTR6068 | EES in New Business         | 4   |       |

**Enrichment Research Track**

| Code     | Course Name         | SCU | Total |
|----------|---------------------|-----|-------|
| RSCH6037 | Research Experience | 8   | 16    |
| RSCH6038 | Scientific Writing  | 4   |       |
| RSCH6039 | Global EES          | 4   |       |

**Enrichment Community Development Track**

| Code     | Course Name                               | SCU | Total |
|----------|---|-----|-------|
| CMDV6001 | Community Outreach Project Implementation | 8   | 16    |
| CMDV6002 | Community Outreach Project Design         | 4   |       |
| CMDV6003 | Employability and Entrepreneurial Skills  | 4   |       |

**Enrichment Study Abroad Track\***

| Course Name |                                     | SCU | Total |
|-------------|-------------------------------------|-----|-------|
| GLOB6005    | Elective Course for Study Abroad 1  | 4   | 16    |
| GLOB6006    | Elective Course for Study Abroad 2  | 4   |       |
| GLOB6007    | Elective Course for Study Abroad 3  | 4   |       |
| GLOB6008    | Elective Course for Study Abroad 4  | 4   |       |
| GLOB6009    | Elective Course for Study Abroad 5  | 2   |       |
| GLOB6010    | Elective Course for Study Abroad 6  | 2   |       |
| GLOB6011    | Elective Course for Study Abroad 7  | 2   |       |
| GLOB6012    | Elective Course for Study Abroad 8  | 2   |       |
| GLOB6013    | Elective Course for Study Abroad 9  | 2   |       |
| GLOB6014    | Elective Course for Study Abroad 10 | 2   |       |
| GLOB6015    | Elective Course for Study Abroad 11 | 2   |       |
| GLOB6016    | Elective Course for Study Abroad 12 | 2   |       |

\*)Transferred courses will be transferred based on credit transfer policies on study program with total of 16 credits.

**Student should pass all of these quality controlled courses as listed below:**

| No | Code     | Course Name                   | Minimum Grade |
|----|----------|-------------------------------|---------------|
| 1  | CHAR6013 | Character Building: Pancasila | B             |
| 2  | ENTR6004 | Entrepreneurship II           | C             |
| 3  | COMP6047 | Algorithm and Programming*    | C             |
| 4  | COMP6048 | Data Structures*              | C             |
| 5  | STAT6026 | Probability and Statistics    | C             |
| 6  | MATH6039 | Calculus II*                  | C             |
| 7  | STAT6020 | Statistical Theory II*        | C             |
| 8  | STAT6085 | Regression Analysis           | C             |
| 9  | STAT6036 | Stochastic Processes          | C             |
| 10 | STAT6053 | Multivariate Statistics*      | C             |

\*)Tutorial & Multipaper